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PRELIMINARY SPECIFICATIONS FOR MAGNETIC DATA RECORDER SET

1. SCOPE

1.1 Type. - This exhibit describes a compact, portable battery powered dual channel tape recorder capable of recording data and synchronizing signals simultaneously or capable of recording voice signals using standard dual track recording techniques.

1.2 Nomenclature. - Nomenclature for the Magnetic Tape Data Recorder Set and components thereof will be furnished upon application to the procuring activity.

2. APPLICABLE DOCUMENTS

2.1 The following specifications of the issue in effect on date of invitation for bids, form a part of this exhibit to the extent specified herein:

SPECIFICATIONS

Federal

TT-C-595

WT-61a

Colors: (For) Ready-Mixed Paints
Tape, Recording, Magnetic Control and Reels
Recording Tape one quarter inch

Military

MIL-V-173

Varnish, Moisture - and Fungus-Resistant,
for the Treatment of Communications,
Electronics, and Associated Electrical
Equipment

JAN-J-641

MIL-E-4158

Jacks, Telephone

Electronic Equipment, Ground: General
Requirements for

MIL-P-15035

Plastic-Material, laminate, Thermosetting;
Sheets, Cotton-Fabric-Base, Phenolic-
Resin

(Copies of specifications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 Component Parts. - The Magnetic Tape Data Recorder Set shall consist of the following items:

- (a) 1 each recorder w/tape and reels
- (b) 1 each microphone w/cord
- (c) 1 each battery pack
- (d) 1 each reproducer

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3.2 General. - The requirements of Specification MIL-E-4158 are applicable as requirements of this exhibit with the following additions or exceptions as identified by the similarity of paragraph headings or subject.

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3.2.1.1 Cabling. - The cabling should be such that the subassemblies shall be capable of separation for purposes of performing maintenance.

3.2.1.2 Protection of cables for other than radio-frequency use. - Wherever a cable is used for carrying other than radio-frequency currents, it shall be adequately protected from abrasion and possible shorting, especially at the terminations.

3.2.1.3 Waterproofness. - The Magnetic Tape Data Recorder Set equipment cases shall be reasonably waterproof (i.e., for resistance to perspiration and/or rain; they are not expected to resist immersion in water).

3.2.1.4 Protective treatment. - When materials are used in the construction of the Magnetic Tape Data Recorder Set which are subject to deterioration when exposed to climatic and environmental conditions likely to occur during service usage, they shall be protected against such deterioration in a manner that shall in no way prevent compliance with the performance requirements of this exhibit. The use of any protective coating which shall crack, chip, or scale with age or extremes of climatic and environmental conditions shall be avoided.

3.2.1.5 Gear assemblies. - Gear assemblies shall be properly aligned and meshed and shall be operated without interference, tight spots, loose spots, or other irregularities. Where required for accurate adjustment, gear assemblies shall be free from backlash. Laminated thermosetting plastic gears and cams shall be type FBI or FBM conforming to Specification MIL-P-15935 where only mechanical properties are required, and type FBG or FBE where mechanical and electrical properties are required.

3.2.1.6 Physical characteristics. - The recorder equipment shall be designed and housed to allow maximum accessibility for maintenance, maximum operational ease and minimum operator error. All units shall be made as small in physical volume as can be reasonably obtained.

3.2.1.7 Service conditions (mechanical). - The Magnetic Tape Data Recorder Set shall be designed to be resistant to shock and vibration incurred in normal handling and service, as specified in this exhibit, and to function satisfactorily when subjected to the following service condition:

a. Orientation. - Inclination at any angle.

3.2.1.8 Service life. - The Magnetic Tape Data Recorder Set shall be capable of operation for a period of one year without repairs that require more than one-half hour of nonoperation per day for maintenance, with the exception of tube and battery replacement. The operational period may start after an initial storage period not exceeding 2 years.

3.2.1.9 Encapsulation. - All non-movable parts shall be encapsulated.

3.3 Design. - The detailed mechanical and electrical design of the equipment shall be accomplished subject to the requirements of this exhibit. The requirements are detailed only to the extent considered necessary to obtain the desired mechanical and electrical performance. Any unit, item or part considered herein shall be supplied even though that unit, item or part may not be specifically described or called for in this exhibit. Reliability of operation with a minimum of maintenance and adjustment is of paramount importance.

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3.4 Detailed requirements. -

3.4.1 Performance. - The Recorder shall be capable of recording non-communication type audio signals or voice frequency signals [redacted]

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3.5 Details of Components. -

3.5.1 Recorder. - The recorder shall consist of the main sub-miniature recording assembly including the tape reels, batteries, recording amplifier and tape transport mechanism.

3.5.1.1 Size. - The recorder shall not exceed 5 3/4" x 4" x 1" in size including batteries. Transistors and printed circuits techniques shall be employed wherever a size and weight reduction could be obtained by the use thereof.

3.5.1.2 Weight. - The weight shall be minimized and shall not exceed 16 ounces.

3.5.1.3 Recording and Reproducing medium. - The recording medium shall consist of Mylar magnetic tape.

3.5.1.4 Recording time. - The recorder shall be capable of dual track recording with 30 minute recording time. A visual means of indicating time remaining shall be provided. An automatic stop shall be provided to prevent tape breakage and/or coming loose when end of tape supply is reached.

3.5.1.5 Speed Variation. - The magnetic tape speed shall be controlled entirely by the speed of the driving capstan. The speed of recording medium on short and long time recordings shall be essentially constant, with less than one per cent flutter and wow.

3.5.1.6 Power Supply. - The recorder shall operate entirely from self-contained batteries. All dry batteries shall be of a type available from normal commercial sources. The use of rechargeable dry batteries, such as the Yardney "Silver-Cell" shall be considered.

3.5.1.7 Power Supply. - The minimum battery life shall be from five to six hours.

3.5.1.8 Frequency Response. - The frequency response shall be 100 to 10,000 cycles/sec. \pm 2db.

3.5.1.9 Distortion. - The distortion shall not exceed 15% for voice and data signals or 1/2 of 1% distortion for the synchronizing signal.

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3.5.1.10 Sensitivity. - The recorder with its associated microphone shall have sufficient sensitivity to obtain an intelligible recording of a normal conversational voice level [redacted]

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3.5.1.11 Signal to noise ratio. - The signal to noise ratio shall be at least 30 db measured as follows:

S Power recorded 1000 cps tone, at 15 per cent distortion.

N Noise power on medium previously run through the recorder with zero recording level.

3.5.1.12 Automatic Record Volume Control. - Automatic record volume control shall be provided capable of twenty (20) d.b. compression.

3.5.1.13 Recording Level Control. - A recording level control (suitable potentiometer) shall be provided.

The control knob shall be indexed and designed to furnish a visual indication of the level setting and permit the operator to perceive the setting of the recording level by means of the tactile sense. 25X1

3.5.1.14 Noise. - The recorder shall be electrically and mechanically quiet. There shall be no perceptible noise from the motor, either electrical or mechanical.

3.5.1.15 Erase. - No provisions are required for erasing the medium in the recorder. Pre-erased medium shall be used. Provision for accomplishing erasure shall be made in the reproducer.

3.5.1.16 Control Switch. - The control switch shall be a push type switch which shall control both amplifier and motor. It shall be so designed and mounted as to permit positive operation and control with a minimum of effort, and provide for use of a remote control switch.

3.5.1.17 Fungus Resistance. - The recorder shall be constructed of fungus resistant materials insofar as possible. Those materials not inherently fungus proof shall be properly treated.

3.5.1.18 Rewind. - No provisions are required for rewinding the recorded medium in the recorder. Rewind shall be accomplished in the reproducer.

3.5.1.19 Data Signals. - The recorder shall be capable of recording data signals with repetition rates of from 50 to 1500 pulses per second.

3.5.1.20 Synchronizing Signal. - A four kc sine wave shall be generated and recorded simultaneously on track 2 with the data signals recorded on track 1 for synchronizing purposes.

3.5.19 The input connector for the microphone, data signals and 4 kc sine wave signal shall be a Microdot or Amphenol 21598 connector.

3.5.2.1 Tape Reels. - The Tape reels shall contain sufficient recording medium to permit one half hour continuous recording.

3.5.3 Microphone. - An external miniature microphone capable of concealment under a tie pin, lapel, etc., shall be provided. This microphone shall be connected to the recorder by approximately four feet of appropriate cable.

3.5.3.1 The microphone shall be capable of meeting the recorder service requirements as specified herein.

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3.5.4 Reproducer. - A suitable desk type reproducer shall be provided to perform the playback function, also rewind and erase; for 115 V. A. C. 50 or 60 cps. Single phase operation.

3.5.4.1 Size. - The overall dimensions of the reproducer, exclusive of handles and other external hardware, shall not exceed 9 inches in height by 14 inches in depth by 14 inches in width.

3.5.4.2 Carrying handle. - A carrying handle, suitable for rough service conditions and formed to comfortably fit the hand, shall be securely mounted to the cabinet.

3.5.4.3 Monitor Jack. - Jack, Telephone TT-072 in accordance with Specification JAN-J-641, shall provide a termination for the amplifier output. The jack shall disconnect the loudspeaker whenever the headset plug is inserted and shall connect the headset to the amplifier output.

3.5.4.4 Cabinet. - The equipment shall be inclosed in a drip proof, portable metal cabinet.

3.5.4.5 Controls. - The following controls shall be provided as a minimum:

a. Power "ON - OFF" switch

b. Manual volume control to adjust the output level at the headset or speaker during playback.

3.5.4.6 Forward and reverse speeds. - The reproducer shall be capable of fast forward and reverse speeds of approximately ten feet of magnetic tape per second.

3.5.4.7 Foot switch. - A foot switch for reversing and forward playback at normal speeds shall be included as part of the reproducer with an appropriate length of control cable.

3.5.4.8 Amplifier. - The amplifier shall have two outputs, one output of 3.2 ohms connected directly to the loudspeaker, and one output of 600 ohms terminating in the headset jack.

3.5.4.8.1 Power output. - The 3.2 ohm output shall have a power output of 1 watt. The 600 ohm output shall have a power output of 0.01 watt at a level corresponding to not more than 0.5 watt to the loudspeaker.

3.5.4.9 Loudspeaker. - The loudspeaker shall be an integral part of each reproducer and shall be designed to provide a means of reproducing a recorded signal of 100 to 10,000 cps.

3.5.4.10 Power cable. - A power cable of 10 feet long terminating in a male plug on one end and a female receptacle on the other end shall be provided.

3.5.4.11 Power receptacle. - A recessed male line receptacle shall be provided on the reproducer.

3.5.4.12 Erasing. - The reproducer shall be capable of completely erasing the recorded information on the medium.

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3.5.4.13 Speed. - A means shall be provided in the reproducer for synchronizing the magnetic tape speed during playback to the prevailing speed during the recording condition.

3.5.4.14 Playback Capability. - The reproducer shall be provided with means for playing back both recorded tracks simultaneously with separate amplifying circuits for each track or it shall play back one track only as in standard dual track recording techniques.

4. QUALITY ASSURANCE PROVISIONS

4.1 Acceptance tests. - The equipment shall be subject to acceptance tests to determine compliance with the requirements of this exhibit. Preliminary acceptance tests shall be conducted by the contractor at the contractor's plant and witnessed by authorized representatives of the procuring activity. Final acceptance tests shall be conducted by Government personnel at Rome Air Development Center, Griffiss Air Force Base, Rome, New York.

4.2 Previous acceptance or approval. - Previous acceptance or approval of material or release of any design by the procuring activity shall in no case be construed as a guarantee of the acceptance of the finished product.

4.3 Prior tests by contractor. - No item, part or complete equipment shall be submitted to the Government inspector by the contractor until it has been satisfactorily tested and inspected by the contractor and found to comply, to the best of his knowledge and belief, with all applicable requirements.

78 4.4 Test Coordination. - The contractor's procedures and methods of testing and inspecting the equipment shall be submitted to the procuring activity at least one month prior to the start of testing.

5. PREPARATION FOR DELIVERY

5.1 General. - The packaging, packing, and marking requirements specified herein apply only to direct purchases by, or direct shipments to, the Government, for experimental or development purposes.

5.2 Packaging and packing. - Packaging and packing for shipment shall be in accordance with the instructions of the procuring activity.

5.3 Marking. - Each interior package (or container) shall be durably and legibly marked to identify the contents in such a manner that the markings will not become damaged when the packages are opened.

6. NOTES

6.1 Additional copies of this exhibit will be furnished only to those Government offices and to those bidders that have direct interest in this procurement.

6.2 Reference to this exhibit should be by the above title, by the exhibit number and contract number, or, if the contract number is not known, by the purchase request number.

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